

U.S. DEPARTMENT OF COMMERCE PATENT AND TRADEMARK OFFICE FORM PTO-1390 (Modified) (REV 10-95)		ATTORNEY'S DOCKET NUMBER 1535
TRANSMITTAL LETTER TO THE UNITED STATES DESIGNATED/ELECTED OFFICE (DO/EO/US) CONCERNING A FILING UNDER 35 U.S.C. 371		U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 09/831056
INTERNATIONAL APPLICATION NO. PCT/DE 00/02993	INTERNATIONAL FILING DATE SEPTEMBER 1, 2000	PRIORITY DATE CLAIMED SEPTEMBER 21, 1999
TITLE OF INVENTION DRIVE SHAFT FOR A WINDSHIELD WIPER		
APPLICANT(S) FOR DO/EO/US Wilfried MERKEL, Roger DAENEN		
Applicant herewith submits to the United States Designated/Elected Office (DO/EO/US) the following items and other information:		
<ol style="list-style-type: none"> <input checked="" type="checkbox"/> This is a FIRST submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is a SECOND or SUBSEQUENT submission of items concerning a filing under 35 U.S.C. 371. <input type="checkbox"/> This is an express request to begin national examination procedures (35 U.S.C. 371(f)) at any time rather than delay examination until the expiration of the applicable time limit set in 35 U.S.C. 371(b) and PCT Articles 22 and 39(1). <input type="checkbox"/> A proper Demand for International Preliminary Examination was made by the 19th month from the earliest claimed priority date. <input checked="" type="checkbox"/> A copy of the International Application as filed (35 U.S.C. 371 (c) (2)) <ol style="list-style-type: none"> <input type="checkbox"/> is transmitted herewith (required only if not transmitted by the International Bureau). <input checked="" type="checkbox"/> has been transmitted by the International Bureau. <input type="checkbox"/> is not required, as the application was filed in the United States Receiving Office (RO/US). <input checked="" type="checkbox"/> A translation of the International Application into English (35 U.S.C. 371(c)(2)). <input type="checkbox"/> A copy of the International Search Report (PCT/ISA/210). <input type="checkbox"/> Amendments to the claims of the International Application under PCT Article 19 (35 U.S.C. 371 (c)(3)) <ol style="list-style-type: none"> <input type="checkbox"/> are transmitted herewith (required only if not transmitted by the International Bureau). <input type="checkbox"/> have been transmitted by the International Bureau. <input type="checkbox"/> have not been made; however, the time limit for making such amendments has NOT expired. <input type="checkbox"/> have not been made and will not be made. <input type="checkbox"/> A translation of the amendments to the claims under PCT Article 19 (35 U.S.C. 371(c)(3)). <input checked="" type="checkbox"/> An oath or declaration of the inventor(s) (35 U.S.C. 371 (c)(4)). <input type="checkbox"/> A copy of the International Preliminary Examination Report (PCT/IPEA/409). <input type="checkbox"/> A translation of the annexes to the International Preliminary Examination Report under PCT Article 36 (35 U.S.C. 371 (c)(5)). 		
<p>Items 13 to 18 below concern document(s) or information included:</p> <ol style="list-style-type: none"> <input checked="" type="checkbox"/> An Information Disclosure Statement under 37 CFR 1.97 and 1.98. <input checked="" type="checkbox"/> An assignment document for recording. A separate cover sheet in compliance with 37 CFR 3.28 and 3.31 is included. <input checked="" type="checkbox"/> A FIRST preliminary amendment. A SECOND or SUBSEQUENT preliminary amendment. <input type="checkbox"/> A substitute specification. <input type="checkbox"/> A change of power of attorney and/or address letter. <input checked="" type="checkbox"/> Certificate of Mailing by Express Mail <input type="checkbox"/> Other items or information: 		
		

U.S. APPLICATION NO. (IF KNOWN, SEE 37 CFR 097831056	INTERNATIONAL APPLICATION NO. PCT/DE 00/02993	ATTORNEY'S DOCKET NUMBER 1535
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20. The following fees are submitted.:

BASIC NATIONAL FEE (37 CFR 1.492 (a) (1) - (5)) :

<input type="checkbox"/> Search Report has been prepared by the EPO or JPO	\$930.00
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482)	\$720.00
<input type="checkbox"/> No international preliminary examination fee paid to USPTO (37 CFR 1.482) but international search fee paid to USPTO (37 CFR 1.445(a)(2))	\$790.00
<input checked="" type="checkbox"/> Neither international preliminary examination fee (37 CFR 1.482) nor international search fee (37 CFR 1.445(a)(2)) paid to USPTO	\$1,070.00
<input type="checkbox"/> International preliminary examination fee paid to USPTO (37 CFR 1.482) and all claims satisfied provisions of PCT Article 33(2)-(4)	\$98.00

CALCULATIONS PTO USE ONLY

ENTER APPROPRIATE BASIC FEE AMOUNT =

\$1,000.00

Surcharge of **\$130.00** for furnishing the oath or declaration later than 20 30 months from the earliest claimed priority date (37 CFR 1.492 (e)).

\$0.00

CLAIMS	NUMBER FILED	NUMBER EXTRA	RATE	
Total claims	11 - 20 =	0	x \$18.00	\$0.00
Independent claims	1 - 3 =	0	x \$80.00	\$0.00
Multiple Dependent Claims (check if applicable).			<input type="checkbox"/>	\$0.00

TOTAL OF ABOVE CALCULATIONS = \$1,000.00

Reduction of 1/2 for filing by small entity, if applicable. Verified Small Entity Statement must also be filed (Note 37 CFR 1.9, 1.27, 1.28) (check if applicable).

\$0.00

SUBTOTAL = \$1,000.00

Processing fee of **\$130.00** for furnishing the English translation later than 20 30 months from the earliest claimed priority date (37 CFR 1.492 (f)).

\$0.00

TOTAL NATIONAL FEE = \$1,000.00

Fee for recording the enclosed assignment (37 CFR 1.21(h)). The assignment must be accompanied by an appropriate cover sheet (37 CFR 3.28, 3.31) (check if applicable).

\$40.00

TOTAL FEES ENCLOSED = \$1,040.00

Amount to be: refunded	\$
charged	\$

- A check in the amount of _____ to cover the above fees is enclosed.
- Please charge my Deposit Account No. **19-4675** in the amount of **\$1,040.00** to cover the above fees. A duplicate copy of this sheet is enclosed.
- The Commissioner is hereby authorized to charge any fees which may be required, or credit any overpayment to Deposit Account No. **19-4675** A duplicate copy of this sheet is enclosed.

NOTE: Where an appropriate time limit under 37 CFR 1.494 or 1.495 has not been met, a petition to revive (37 CFR 1.137(a) or (b)) must be filed and granted to restore the application to pending status.

SEND ALL CORRESPONDENCE TO:

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M. Striker
by *L. Borres* *AN 28/03*
MICHAEL J. STRIKER

NAME

27233

REGISTRATION NUMBER

MAY 4, 2001

DATE

UNITED STATES PATENT AND TRADEMARK OFFICE

Examiner: Group: Attorney Docket # 1535

Applicant(s) : MERKEL, W., ET AL

Serial No. :

Filed : Simultaneously

For : DRIVE SHAFT FOR A WINDSHIELD WIPER

SIMULTANEOUS AMENDMENT

May 4, 2001

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

S I R S:

Simultaneously with filing of the above identified application
please amend the same as follows:

In the Claims:

Cancel all claims without prejudice.

Substitute the claims attached hereto.

REMARKS:

This Amendment is submitted simultaneously with filing of the above identified application.

With the present Amendment applicant has amended the claims so as to eliminate their multiple dependency.

Consideration and allowance of the present application is most respectfully requested.

Respectfully submitted,

Michael J. Striker
Attorney for Applicant
Reg. No. 27233

MJS
by *Mike O'Byr*
11/18/73

Claims

1. A drive shaft (10) for a windshield wiper, to which shaft a crank (12) is fastened, characterized in that a base body (14) of the drive shaft (10) is made from an extruded light metal profile and on its free end, in the region of a fastening part, carries a connection part (16, 22) of a harder material, which has a screw thread (18).

2. The drive shaft (10) of claim 1, characterized in that the connection part (16, 22) is of steel, bronze or copper.

3. The drive shaft (10) of claim 1, characterized in that the connection part (16) has a conical seat (20) with fluting for the fastening part.

4. The drive shaft (10) of claim 1, characterized in that the connection part (22) has a polygonal slaving profile (24).

5. The drive shaft (10) of claim 1, characterized in that the base body (14) has a conical protrusion (26), onto which the connection part (16) is placed and with which the connection part is joined by adhesive bonding, welding, press-fitting or assembly casting.

6. The drive shaft (10) of claim 5, characterized in that the connection part (16, 22) is cast with the base body (14) via an adapter piece (28).

7. The drive shaft (10) of claim 5, characterized in that the connection part (16, 22) is seated on a longitudinally fluted

conical protrusion (26) of the base body, or on a fluted cone (34) of the adapter piece (28).

8. The drive shaft (10) of claim 1, characterized in that it has at least one longitudinal conduit (38, 40).

9. The drive shaft (10) of claim 6, characterized in that the connection part (16, 22) is embodied as a threaded sleeve, through which the adapter piece (28) having at least one longitudinal conduit (40) is guided.

10. The drive shaft (10) of claim 1, characterized in that the base body (14) and the connection part (16, 22) or the crank (12) are chemically nickel-plated after being joined together.

11. The drive shaft (10) of claim 1, characterized in that on the end toward the crank, the base body (14) has a region with fluting (46) in the longitudinal direction, over which fluting the crank (12), of a harder material, is cast to the base body (14) with a connecting layer (42) of zinc or the like.

Claims

1. A drive shaft (10) for a windshield wiper, to which shaft a crank (12) is fastened, characterized in that a base body (14) of the drive shaft (10) is made from an extruded light metal profile and on its free end, in the region of a fastening part, carries a connection part (16, 22) of a harder material, which has a screw thread (18).

2. The drive shaft (10) of claim 1, characterized in that the connection part (16, 22) is of steel, bronze or copper.

3. The drive shaft (10) of claim 1 [or 2], characterized in that the connection part (16) has a conical seat (20) with fluting for the fastening part.

4. The drive shaft (10) of [one of claims 1 or 2] claim 1, characterized in that the connection part (22) has a polygonal slaving profile (24).

5. The drive shaft (10) of [one of the foregoing claims] claim 1, characterized in that the base body (14) has a conical protrusion (26), onto which the connection part (16) is placed and with which the connection part is joined by adhesive bonding, welding, press-fitting or assembly casting.

6. The drive shaft (10) of claim 5, characterized in that the connection part (16, 22) is cast with the base body (14) via an adapter piece (28).

7. The drive shaft (10) of claim 5 [or 6], characterized

in that the connection part (16, 22) is seated on a longitudinally fluted conical protrusion (26) of the base body, or on a fluted cone (34) of the adapter piece (28).

8. The drive shaft (10) of [one of the foregoing claims] claim 1, characterized in that it has at least one longitudinal conduit (38, 40).

9. The drive shaft (10) of [one of claims 6-8] claim 6, characterized in that the connection part (16, 22) is embodied as a threaded sleeve, through which the adapter piece (28) having at least one longitudinal conduit (40) is guided.

10. The drive shaft (10) of [one of the foregoing claims] claim 1, characterized in that the base body (14) and the connection part (16, 22) or the crank (12) are chemically nickel-plated after being joined together.

11. The drive shaft (10) of [one of the foregoing claims] claim 1, characterized in that on the end toward the crank, the base body (14) has a region with fluting (46) in the longitudinal direction, over which fluting the crank (12), of a harder material, is cast to the base body (14) with a connecting layer (42) of zinc or the like.

11/PLTS

DRIVE SHAFT FOR A WINDSHIELD WIPER

Prior Art

The invention is based on a drive shaft for a windshield wiper as generically defined by the preamble
5 to claim 1.

Known windshield wipers have a wiper arm, which is constructed from a fastening part and a hinge part, pivotably connected to it via a foldaway joint, and having a wiper rod. A hooklike end of the wiper rod engages a suspension box of a wiper blade, which is formed by two side cheeks of a middle bracket and includes a connection part with a hinge bolt. The joint thus formed guides the wiper blade over the vehicle window during the pivoting motion.

10 The wiper arm is connected via its fastening part solidly but detachably to a drive shaft. The drive shaft protrudes from the vehicle body and on its free shaft end it has an outer cone, which cooperates with an inner cone on the fastening part, in that a screw nut firmly presses the conical parts together. The drive shaft is as a rule made from steel and is riveted to a
15 crank on its drive-side end.
20

From German Patent Disclosure DE 44 28 371 A1, a
25 shaft hub connection of a windshield wiper is known in which the drive shaft, in the connecting region with the fastening part, has a cross section other than circular, and in particular a polygonal cross section, and has a

shoulder. The fastening part rests with one edge of a recess on the shoulder or on a shim, and the recess widens conically toward the end of the drive shaft. A fitting conical clamping part is inserted into the recess and is pressed against the fastening part by a screw nut. The clamping part has a passageway for the drive shaft, and the cross-sectional profile of the passageway is complimentary to that of the drive shaft.

A shaft hub connection of a windshield wiper is also known from US Patent 3,085,821. The fastening part rests with one edge of a recess on a shoulder of the drive shaft or a shim, and the recess widens conically toward the end of the drive shaft. A fitting conical clamping part is inserted into the recess and presses a screw nut against the fastening part. The clamping part has a passageway for the drive shaft that fits a cylindrical or conical region of the drive shaft with knurling or a zigzag surface. As a result of the conical connection between the fastening part and the clamping part and optionally the conical connection between the clamping part and the drive shaft, the zigzag surface of the fastening part and of the drive shaft is pressed into what until then was a largely smooth surface of the clamping part and deforms it permanently. To that end, the clamping part comprises an elastomer material or a relatively soft nonferrous metal. In addition to a nonpositive engagement, a reinforcing positive engagement is achieved by means of many small side faces of the zigzags.

From German Utility Model DE 89 13 885 U1, it is known to dispose a spray nozzle on a housing of a wiper

bearing. A water conduit extends parallel to the drive shaft through the bearing housing to the spray nozzle.

French Patent Disclosure FR 2 646 801 A shows a windshield wiper with a wiper arm and a wiper blade of plastic. The wiper arm has a hollow profile and is made by an internal gas pressure process. One version has a hinge part with a formed-on hollow wiper rod, and the hollow space is part of a windshield washer and has spray holes that are aimed at the windshield. In a variant, the wiper arm has no hinge part; instead, the wiper rod is formed directly onto the fastening part. The washing fluid is delivered through the drive shaft here.

Advantages of the Invention

According to the invention, the base body of the drive shaft is made from an extruded light metal profile. On its free end in the region of a fastening part, it has a connection part of a harder material, which has a screw thread. As the material, steel will be considered primarily, but other materials are also fundamentally suitable, such as copper and bronze.

The drive shaft of the invention is very light in weight and can be produced economically in many variants. For instance, for receiving a fastening part, the connection part can have a conical seat with fluting or with a polygonal slaving profile, and the material can be adapted optimally to the increased demands in terms of pressure per unit of surface area, wear resistance, and mounting capability. Thus reliable,

easily released seating of the fastening part is assured even after frequent assembly and disassembly.

The connection part is expediently connected by means of adhesive bonding, welding, pressing, or assembly casting. To that end, a conical protrusion on the base body is advantageous. On the one hand, it facilitates centering of the two parts to one another; on the other hand, it makes a large joining area possible, by way of which the forces and torques are readily transmitted.

For the assembly casting, the connection part is placed on the base body, and the joining gap is filled by injection of liquid zinc, magnesium, lead, tin, or a suitable alloy. A [*] of zinc or a suitable material can be disposed between the base body and the connection part and can penetrate the base body or connection part. The [*] is expediently also seated on a longitudinally fluted, conical protrusion of the base body and itself has a fluted cone for receiving the connection part.

The drive shaft, comprising a base body, optionally a [*] and the connection part, can, without substantial additional cost, have one or more longitudinal conduits, through which washing fluid can be carried to spray nozzles, which can be disposed in or on a wiper arm, not otherwise shown. The longitudinal conduits can also receive heating lines for heating up the washing fluid.

To make the connection part with a central bore simple in design, it is expedient to provide the [*] of

zinc with the longitudinal conduits and extend it through the connection part. The [*] can have an outward-pointing head, to which conduits leading onward can easily be connected.

5 A similar fastening technique as for the connection part can also be used for the crank. Here it is expedient that the base body, on the end toward the crank, has a region with fluting in the longitudinal direction, over which fluting the crank of a harder material is cast with the base body.

10

To avoid contact corrosion among the various components of the drive shaft, it is advantageous that the base body and the connection part or the crank are chemically nickel-plated after being joined together.

15 Drawing

Further advantages will become apparent from the ensuing drawing description. Exemplary embodiments of the invention are shown in the drawing. The drawing, specification and claims include numerous characteristics in combination. One skilled in the art will expediently consider the characteristics individually as well and put them together to make useful further combinations.

20

Shown are:

25 Fig. 1, a drive shaft of the invention in an exploded view; and

Fig. 2, a variant of a connection part.

Description of the Exemplary Embodiments

A drive shaft 10 is put together from a plurality of parts solidly joined together, specifically a base body 14, a crank 12, a connection part 16, 22, and 5 optionally an adapter piece 28.

The base body 14 is made from an extruded light metal profile and has two longitudinal conduits 38 and a conical protrusion 26, which can have longitudinal fluting. The connection part for a fastening part of a wiper arm can be placed on the conical protrusion 26 either directly or indirectly via the adapter piece and joined to the base body by means of adhesive bonding, welding, pressing, or assembly casting. The adapter piece 28 rests with its collar 30 on a shoulder 34 of the base body 14.

Toward the connection part 16, the adapter piece 28 has a cone 34 with fluting 36, onto which the connection part 16 is placed or pressed. The adapter piece 28 protrudes with its head 42 through the connection part 16. The adapter piece 28 likewise has longitudinal conduits 40, which lengthen the longitudinal conduits 38 of the base body 14 and to which conduits leading onward can be connected.

The connection part 16 is made from a harder material, so that it can readily withstand the greater stresses in the region of a screw thread 18 or a conical seat 20. This assures a more secure seat of the wiper

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arm and easy assembly and disassembly of the wiper arm. The connection part 22, instead of the conical seat 20 of the connection part 16, has a polygonal slaving profile 22, which can extend slightly conically toward the screw thread 18.

10

The crank 12, similarly to the connection part 16 or 22, is joined to the base body 14 via a connecting layer 44 of zinc or some other suitable material by assembly casting. The base body, at the connecting point, has fluting 46, as a result of which the material engagement is reinforced by a positive engagement.

Claims

1. A drive shaft (10) for a windshield wiper, to which shaft a crank (12) is fastened, characterized in that a base body (14) of the drive shaft (10) is made from an extruded light metal profile and on its free end, in the region of a fastening part, carries a connection part (16, 22) of a harder material, which has a screw thread (18).

2. The drive shaft (10) of claim 1, characterized in that the connection part (16, 22) is of steel, bronze or copper.

3. The drive shaft (10) of claim 1 or 2, characterized in that the connection part (16) has a conical seat (20) with fluting for the fastening part.

4. The drive shaft (10) of one of claims 1 or 2, characterized in that the connection part (22) has a polygonal slaving profile (24).

5. The drive shaft (10) of one of the foregoing claims, characterized in that the base body (14) has a conical protrusion (26), onto which the connection part (16) is placed and with which the connection part is joined by adhesive bonding, welding, press-fitting or assembly casting.

6. The drive shaft (10) of claim 5, characterized in that the connection part (16, 22) is cast with the base body (14) via an adapter piece (28).

7. The drive shaft (10) of claim 5 or 6, characterized in that the connection part (16, 22) is seated on a longitudinally fluted conical protrusion (26) of the base body, or on a fluted cone (34) of the adapter piece (28).

8. The drive shaft (10) of one of the foregoing claims, characterized in that it has at least one longitudinal conduit (38, 40).

9. The drive shaft (10) of one of claims 6-8, characterized in that the connection part (16, 22) is embodied as a threaded sleeve, through which the adapter piece (28) having at least one longitudinal conduit (40) is guided.

10. The drive shaft (10) of one of the foregoing claims, characterized in that the base body (14) and the connection part (16, 22) or the crank (12) are chemically nickel-plated after being joined together.

11. The drive shaft (10) of one of the foregoing claims, characterized in that on the end toward the crank, the base body (14) has a region with fluting (46) in the longitudinal direction, over which fluting the crank (12), of a harder material, is cast to the base body (14) with a connecting layer (42) of zinc or the like.

Abstract

The invention is based on a drive shaft (10) for a windshield wiper, to which shaft a crank (12) is fastened.

5

It is proposed that a base body (14) of the drive shaft (10) is made from an extruded light metal profile and on its free end, in the region of a fastening part, carries a connection part (16, 22) of a harder material, which has a screw thread (18).

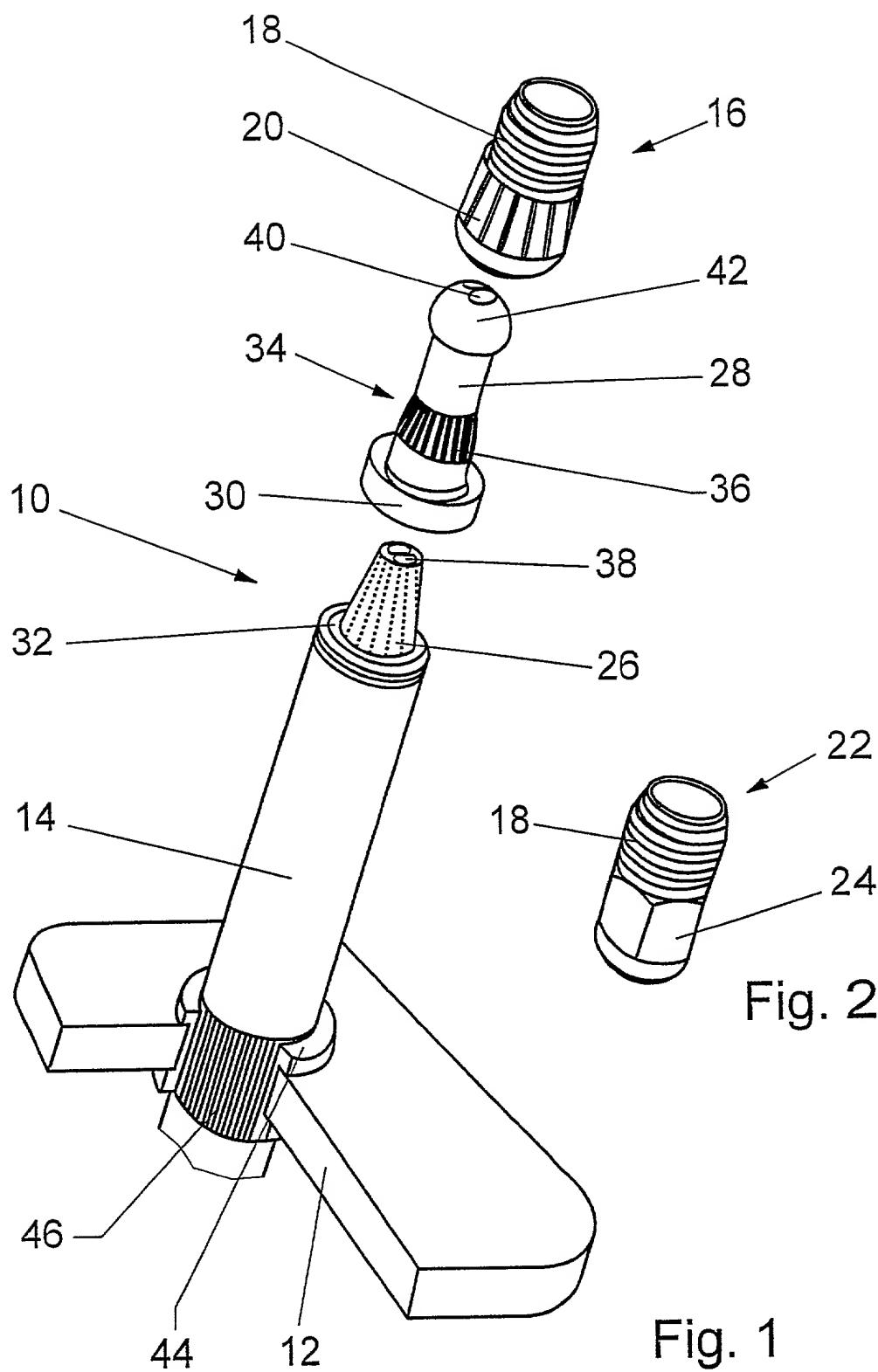
10

(Fig. 1)

List of Reference Numerals

- 10 Drive shaft
- 12 Crank
- 14 Base body
- 16 Connection part
- 18 Screw thread
- 20 Conical seat
- 22 Connection part
- 24 Slaving profile
- 26 Protrusion
- 28 Adapter piece
- 30 Collar
- 32 Shoulder
- 34 Cone
- 36 Fluting
- 38 Longitudinal conduit
- 40 Longitudinal conduit
- 42 Head
- 44 Connecting layer
- 46 Fluting

1 / 1



R.36434

DECLARATION AND POWER OF ATTORNEY FOR NATIONAL STAGE OF PCT PATENT APPLICATION

As a below-named inventor, I hereby declare that:

Wilfried MERKEL
Roger DAENEN

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled **DRIVE SHAFT FOR A WINDSHIELD WIPER** the specification of which was filed as PCT International Application number PCT/DE 00/02993 on September 1, 2000.

I hereby state that I believe the named inventor or inventors in this Declaration to be the original and first inventor or inventors of the subject matter which is claimed and for which a patent is sought.

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose all information which is material to the patentability of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56.

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119(a)-(d) or Section 365 (b) of any foreign application(s) for patent or inventor's certificate, or Section 365(a) of any PCT International application which designated at least one country other than the United States, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate or PCT International application having a filing date before that of the application on which priority is claimed.

Prior foreign application(s):

Priority claimed:

199 45 091.9 (Number)	GERMANY (Country)	SEPTEMBER 21, 1999 (Date filed)	X Yes	
				No
(Number)	(Country)	(Date filed)	Yes	No

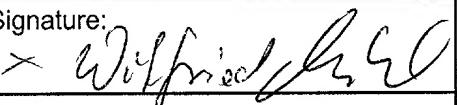
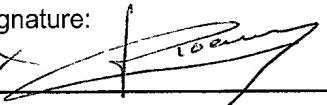
As a named inventor, I hereby appoint the following attorney to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith:

Michael J. Striker, Reg. No. 27233

Direct all telephone calls to Striker, Striker & Stenby at telephone no.: (631) 549 4700 and address and all correspondence to:

STRIKER, STRIKER & STENBY
103 East Neck Road
Huntington, New York 11743
U.S.A.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that wilful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such wilful false statement may jeopardize the validity of the application or any patent issued thereon.

1 - 00	Signature: 	Date: 12.3.01 	Residence and Full Postal Address: Westring 6c 77876 Kappelrodeck DEX Germany
	Full Name of First or Sole Inventor: <u>Wilfried MERKEL</u>	Citizenship: GERMAN	
2 - 00	Signature: 	Date: 16.3.01. 	Residence and Full Postal Address: Gelaesplein 16 B-3770 Vlytingen DEX Belgium
	Full Name of Second Inventor: <u>Roger DAENEN</u>	Citizenship: BELGIAN	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Third Inventor:	Citizenship:	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Fourth Inventor:	Citizenship:	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Fifth Inventor:	Citizenship:	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Sixth Inventor:	Citizenship:	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Seventh Inventor:	Citizenship:	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Eighth Inventor:	Citizenship:	
	Signature:	Date:	Residence and Full Postal Address:
	Full Name of Ninth Inventor:	Citizenship:	